



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,289	03/26/2004	Shi Song	61,127 (47762)	9271
7590	07/12/2004		EXAMINER	
EDWARDS & ANGELL, LLP P.O. Box 55874 Boston, MA 02205				MULL, FRED H
		ART UNIT		PAPER NUMBER
		3662		

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/810,289	SONG ET AL.
	Examiner Fred H. Mull	Art Unit 3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-9 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) 1-9 is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 3/24/04.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Image File Wrapper Notice***

1. Since much of the Office now used the Image File Wrapper system to review applications, applicants are encouraged to submit prior art via Electronic Information Disclosure Statements (eIDS). See 1262 OG 94 (9/17/02), <http://www.uspto.gov/web/offices/com/sol/og/2002/week38/patelec.htm>.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Takatori.

In regard to claims 1 and 9, Takatori discloses an antenna may comprising a plurality of antenna elements (col. 4, line 22), the antenna array synthesizing received signals received by each of the antenna elements by weighting them according to a weighting coefficient and outputting a synthesized signal (col. 4, lines 23-25);

a weighting coefficient calculation unit for calculating the weighting coefficient of received signals by adaptive control (col. 4, lines 26-27);

an evaluation unit for evaluating the convergence status of adaptive control by the weighting coefficient calculation unit (col. 4, lines 48-55);

and a control unit for controlling the operation of adaptive control by the weighting coefficient t calculation unit corresponding to the results of evaluation of convergence status by the evaluation unit (col. 4, lines 36-55).

In regard to claims 2-3, Takatori further discloses the weighting coefficient calculation unit calculates the weighting coefficient by adaptive control using an adaptive algorithm based on the minimum mean square error method so as to minimize the moving average square error between a reference signal and an output signal, and the evaluation unit judges that adaptive control by the weighting coefficient calculation unit has converged when the moving average square error is continuously below a predetermined value for a predetermined number of times (col. 4, lines 41-44).

In regard to claims 4-8, Takatori further discloses the control unit stops the operation of adaptive control by the weighting coefficient calculation unit, when the control unit judges by the evaluation unit that adaptive control by the weighting coefficient calculation unit has converged (col. 4, lines 48-55).

3. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakao.

In regard to claims 1 and 9, Nakao discloses an antenna may comprising a plurality of antenna elements (¶ 62, line 1), the antenna array synthesizing received

signals received by each of the antenna elements by weighting them according to a weighting coefficient and outputting a synthesized signal (¶ 62, lines 1-4);

    a weighting coefficient calculation unit for calculating the weighting coefficient of received signals by adaptive control (¶ 62, lines 1-4);

    an evaluation unit for evaluating the convergence status of adaptive control by the weighting coefficient calculation unit (¶ 62, lines 9-11);

    and a control unit for controlling the operation of adaptive control by the weighting coefficient calculation unit corresponding to the results of evaluation of convergence status by the evaluation unit (¶ 62, lines 6-11).

In regard to claims 2-3, Nakao further discloses the weighting coefficient calculation unit calculates the weighting coefficient by adaptive control using an adaptive algorithm based on the minimum mean square error method so as to minimize the moving average square error between a reference signal and an output signal, and the evaluation unit judges that adaptive control by the weighting coefficient calculation unit has converged when the moving average square error is continuously below a predetermined value for a predetermined number of times (¶ 135).

In regard to claims 4-8, Takatori further discloses the control unit stops the operation of adaptive control by the weighting coefficient calculation unit, when the control unit judges by the evaluation unit that adaptive control by the weighting coefficient calculation unit has converged (Fig. 6; ¶ 161-162).

4. Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Kobayakawa.

In regard to claims 1 and 9, Kobayakawa discloses an antenna comprising a plurality of antenna elements (¶ 5), the antenna array synthesizing received signals received by each of the antenna elements by weighting them according to a weighting coefficient and outputting a synthesized signal (¶ 7);

a weighting coefficient calculation unit for calculating the weighting coefficient of received signals by adaptive control (¶ 7);

an evaluation unit for evaluating the convergence status of adaptive control by the weighting coefficient calculation unit (¶ 123);

and a control unit for controlling the operation of adaptive control by the weighting coefficient calculation unit corresponding to the results of evaluation of convergence status by the evaluation unit (¶ 123).

In regard to claims 2-3, Kobayakawa further discloses the weighting coefficient calculation unit calculates the weighting coefficient by adaptive control using an adaptive algorithm based on the minimum mean square error method so as to minimize the moving average square error between a reference signal and an output signal, and the evaluation unit judges that adaptive control by the weighting coefficient calculation unit has converged when the moving average square error is continuously below a predetermined value for a predetermined number of times (¶ 21-22, 121, 130-131).

In regard to claims 4-8, Takatori further discloses the control unit stops the operation of adaptive control by the weighting coefficient calculation unit, when the

control unit judges by the evaluation unit that adaptive control by the weighting coefficient calculation unit has converged (¶ 119-127).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 703-305-1250. The examiner can normally be reached on M-F 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 703-360-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred H. Mull  
Examiner  
Art Unit 3662

fhm

  
GREGORY C. ISSING  
PRIMARY EXAMINER